

# NOVASTREAM 6000

## Wall Mount Gas Analyser



TCD

### % and ppm analysis using Thermal Conductivity Detector

The NovaSTREAM 6000-TCD Analyser is explosion proof utilising a Purge method of conformity, and is housed in a mild steel enclosure for use in the hazardous areas of Zone 1 and Zone 2 classification. This specially designed enclosure enables real-time analysis in hazardous areas with reliable and consistent results.

The core of this analyser system is the NovaSTREAM 6000 Analyser platform using the unrivalled Thermal Conductivity Detector (TCD) of which AGC Instruments is a leading supplier worldwide. This versatile and robust detector design is ideal for permanent gas analysis and its universal applicability ensures that it is both cost effective and reliable. Using hotwire or thermistor elements, it achieves high accuracy and sensitivity with a response time of < 30 seconds ( $T_{90}$ ). The temperature regulated TCD allows continuous monitoring of the gas stream and stability is guaranteed with < 1% drift over a 24 hour period. Through the additional use of solenoid valves, drift can be eliminated as a constant reference to Zero gas is utilised for greater accuracy. For example, one of the primary applications using the TCD Cell Model Number 10-454-2 is for measuring  $N_2$  in  $H_2$  with results less than 5 ppm achieved.

This analyser is straightforward to use and set-up with all functionality easily accessible and navigable with minimal training required. With the integration of Flow Sensors and 7 voltage free alarm relay contacts, including one for the sample flow, all critical monitoring is automated and provides peace of mind to the operator. Further verification is provided by voltage free contacts for switching in calibration gas inputs externally to support the auto-calibration routine. Both Calibration and Alarm records are maintained. Therefore, the NovaSTREAM 6000-TCD provides peace of mind and an exceptional performance at all times.

The precise results obtained from this analyser can be transmitted via an array of communication modules such as: Active or Passive 4-20mA (2 off), mV Signal, USB (2 off) and VGA outputs. Ethernet, Modbus over TCP/IP and Profibus outputs are also available as optional extras. This allows the analyser to be integrated seamlessly into all analytical infrastructures worldwide.

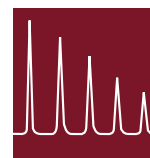
The modular design allows for easy access to the electronics for trouble-free maintenance and servicing. It is both cost effective and reliable with a low cost of ownership due to the low gas and power consumption. The AGC Engineering Team will custom design and test an analytical solution to meet your application and all systems are designed with volume optimised pipe work using only 1/8" Swagelok® fittings for external connections. Therefore, this robust system ensures an excellent stability, sensitivity and a long working life.



### Features

- Explosion Proof for use in Zone 1 and Zone 2
- Cabinet fitted with Purge Controller to EExP standards
- Also available in safe zone configuration
- Thermal Conductivity Detector (TCD)
- Detector variations designed and built to spec
- Ideal for Binary Gas Mixtures or Pure Gases
- Fast Detector Response: < 30 seconds ( $T_{90}$ )
- Long Term Stability & Sensitivity
- 12" LCD Touch Screen
- Fully Automated use with intuitive GUI
- Integrated Configurable Alarms System with Alarm Record
- Added Sample Flow Alarm
- Integrated Diagnostics System
- Flow Sensors
- Voltage free contacts for switching in calibration gas inputs externally
- Auto-Calibration Routine with Calibration Record
- Internal storage of results up to 24 months and data trending via PC
- External I/O Connections for internally pre-wired communication modules: 2 x 4-20mA, 1 x mV Signal, VGA & USB Outputs
- Ethernet, Modbus over TCP/IP & Profibus options
- Easy Access for maintenance and servicing
- Cost Effective and Reliable

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Gas Chromatography since 1965



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## Principle Of Operation

The AGC NovaSTREAM 6000-TCD, using the Thermal Conductivity Detector (TCD), is typically used for the precise analysis of the components in multiple gas mixtures at percentage and ppm levels. The TCD has either four, eight or sixteen sensing elements which are connected to form an electrical Wheatstone bridge circuit. These elements are typically miniature rhenium-tungsten filaments which are mounted in a metallic cell block. A diffusion type thermal conductivity cell is normally used in this analyser and this cell contains a sample and reference gas flow geometry and two elements are installed in each flow system. An electrical current from a regulated power source heats the elements and changes in thermal conductivity of the sample gas result in an output voltage change which can then be measured.

With a quick start up time and fast detector response, operation of the NovaSTREAM 6000-TCD is swift, precise and straightforward. Servicing and maintenance is trouble-free with easy access to the electronic components, thereby providing you with seamless operations. The minimal gas consumption provides an economical platform with a low cost of ownership and long life span.

## Typical Industries

- Hydrogen Plants
- Air Liquefaction plants
- Chemical Plants
- Refrigeration Plants
- Iron and Steel Industry
- Air Separation Units
- Gas Blending Equipment
- Refineries
- Ammonia Plants
- Industrial Gas Production Units
- Power Generation Plants

## Configurations

MODEL	RANGE	EXAMPLE
6000-53	% Analyser	N <sub>2</sub> in He Resolution: 0.1% Accuracy: 0.1%
6000-54	500 ppm to low % Analyser	N <sub>2</sub> in He Resolution: 0.01% Accuracy: 0.05%
6000-55	2 - 500 ppm Analyser	N <sub>2</sub> in H <sub>2</sub> Resolution: 2 ppm LDL: 5 ppm



This analyser system is available for use in Safe Zones and both Hazardous Areas Zone 1 or Zone 2. Please contact AGC Instruments to discuss your application requirements.

## Applications

The table below lists some of the applications (% and ppm) pertaining to the NovaSTREAM 6000-TCD analyser. We will customise each analyser based on your requirements, focussing on the Speed of Response, Resolution and Accuracy levels required for each individual application. Please contact AGC Instruments for the Minimum Detectable Level (MDL) figures and for information relating to any other binary gas mixtures not listed.

Air in H <sub>2</sub>	Ar in H <sub>2</sub>	N <sub>2</sub> in H <sub>2</sub>	O <sub>2</sub> in H <sub>2</sub>		H <sub>2</sub>
Air in Ar	He in Ar	H <sub>2</sub> in Ar	N <sub>2</sub> in Ar	O <sub>2</sub> in Ar	Ar
Air in CO <sub>2</sub>	He in CO <sub>2</sub>	H <sub>2</sub> in CO <sub>2</sub>	N <sub>2</sub> in CO <sub>2</sub>	O <sub>2</sub> in CO <sub>2</sub>	CO <sub>2</sub>
Air in He	Ar in He	N <sub>2</sub> in He	O <sub>2</sub> in He		He
Ar in Air	CH <sub>4</sub> in Air	CO <sub>2</sub> in Air	He in Air	H <sub>2</sub> in Air	Air
Ar in N <sub>2</sub>	CO <sub>2</sub> in N <sub>2</sub>	He in N <sub>2</sub>	H <sub>2</sub> in N <sub>2</sub>	O <sub>2</sub> in N <sub>2</sub>	N <sub>2</sub>
Ar in O <sub>2</sub>	CO <sub>2</sub> in O <sub>2</sub>	He in O <sub>2</sub>	H <sub>2</sub> in O <sub>2</sub>	N <sub>2</sub> in O <sub>2</sub>	O <sub>2</sub>

Specification	
Detector	Thermal Conductivity Detector (TCD)
Typical Ranges	0.01 - 100% / 0.001 - 10% / 0 - 1000 ppm
Analyser Configurations	6000-53 (%) 6000-54 (500 ppm to low %) 6000-55 (2 - 500 ppm)
Limit of Detection (LOD)	Application Dependent: equal to 1 ppm of Air in He
Maximum Resolution	2 ppm
Zero Drift	± 5 ppm when used with Auto-Zero Function (0 - 1000 ppm range)
Response Time	< 1 second to 90 seconds (Application Dependent)
Warm up Time	1 minute to several hours (Application Dependent)
Interface	12" Industrial Grade Colour Touch Screen Control
Outputs / Communication Modules	<ul style="list-style-type: none"> <li>• 2 x Isolated 4-20mA outputs (Active or Passive) [configurable for high &amp; low resolution readings]</li> <li>• 1 x mV Signal output</li> <li>• 1 x RS-232</li> <li>• 2 x USB</li> <li>• VGA</li> <li>• Modbus over TCP/IP*</li> <li>• Profibus*</li> <li>• Ethernet*</li> </ul>
Alarms	7 x Voltage Free Alarm Relay Contacts (including one for sample flow) Alarm Record
Calibration	Auto-Calibration Routine (with internal validation) [Dependent on Model] Voltage Free contacts for switching in the calibration gas inputs externally Calibration/Validation Record
Data / Results	Data Trending via PC connection and 24 months internal storage
Gas Connections	1/8" Swagelok® fittings
Zero Gas Requirements	20 - 200 mL/min (Application Dependent)
Maximum Inlet Pressure	200 kPa (2 Bar)
Minimum Inlet Pressure	1.5 kPa (0.015 Bar) (Application Dependent)
Purge Gas Requirements	Clean Dry Air @ 3.5 - 4 Bar (Application Dependent)
Operating Temperature	5° to 40° Celsius
Power Supply	100 - 120 VAC or 220 - 240 VAC, 50/60 Hz
Max Power Consumption	≤ 300 Watts (Application Dependent)
Dimensions	380 (W) x 363 (D) x 757 (H) - Wall Mount Design
Weight	47 Kg (Dependent on System Configuration/Design)
Certifications	<ul style="list-style-type: none"> <li>• CE</li> <li>• ISO 9001:2015</li> <li>• ATEX &amp; IECEx certified</li> </ul>





## Company Profile

### AGC Instruments Ltd.

AGC Instruments is a leading manufacturer of Gas Analysis Solutions to all users requiring a Quality Control or identification of their gas stream. We have over 60 years experience in providing our customers with their "Total Gas Analysis Solutions". We work closely with all customers to ensure they obtain the analytical solution that meets their needs and a system that is easy to use and understand. All AGC distributors are extremely experienced and factory trained to the highest standards, offering you a complete after sales support service.

The wide range of Detectors available can be customised to measure unique gas streams and we place an emphasis on the continuous development of our analytical solutions. Our worldwide reach with strategic partners ensures that you have peace of mind and after sales care that are important to your operations.



Proven Technology

Precision

Guaranteed Applications

Flexible & Versatile Solutions

High Sensitivity Analysis

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## After-sales Care



AGC Instruments are committed to providing and maintaining quality systems from customer liaison to technical knowledge through to System Design and Delivery. We believe that our After Sales Support to the customer is one of the most important services we can offer. Each Distributor has been carefully selected and trained to ensure our customers receive the best possible service. Furthermore, online customer support and direct support are available to deliver a comprehensive support package.

### Zone 1 ATEX Certification

Certificate Numbers: CSANe 20ATEX1111X  
 Certifying Body: CSA Group Netherlands  
 Equipment Marking:  II 2G Ex pxb IIB+H2 T3 Gb  
 2813



### Zone 2 ATEX Certification

Certificate Number: CSANe 20 ATEX M803  
 Certifying Body: CSA Group Netherlands  
 Equipment Marking:  II 3G Ex pzc IIB+H2 T3 Gc  




### Zone 1 & 2 IECEx Certification

Certificate Number: IECEx SIR 20.0040X  
 Equipment Marking Zone 1: Ex pxb IIB+H2 T3 Gb  
 Equipment Marking Zone 2: Ex pzc IIB+H2 T3 Gc

For further information please contact:

### AGC Headquarters

Unit 2, Shannon Free Zone West,  
 Shannon, Co. Clare, V14 PX03, Ireland.  
 T: +353 61 471632 F: +353 61 471042  
 E: sales@agc-instruments.com

[www.agc-instruments.com](http://www.agc-instruments.com)